

no rupture of aneurysmal wall and no migration, leakage or damage (rupture of Dacron cylinder or fracture of wire frame) of graft in all dogs. These grafts remained patent and pressure gradient (PG) was 14 mmHg except one (PG = 60 mmHg). This was killed and examined by autopsy. The graft was well covered by thin, translucent neointima and effectively recreated the new aortic lumen, completely closing the entry.

Conclusion: 1) Inoue Endovascular Graft was proved to be effective in treatment of aortic dissection without surgery provided that the graft was chosen according to true lumen diameter. 2) IVUS was feasible and safe to provide accurate measurement of true lumen diameter for selection of correct graft size and guide for implantation site to completely close the entry lumen.

983-38

Occlusion of Large Atrial Septal Defects with a Centering Buttoned Device: Early Clinical Experience

Eleftherios B. Sideris, Jung Han Yoon, Chuan-Rong Chen, Maurice Leung, Rajeev Lochan, Anne-Marie Worms, Bernhard Meier, Christian Rey. *Athenian Institute of Pediatric Cardiology, Athens, Greece, for the International Registry of the "Buttoned Device" Trials*

A feasibility study was conducted for the transcatheter occlusion of large ostium secundum atrial septal defects (ASDs) using the centering buttoned device (CBD). The CBD is a modification of the buttoned device, in which a centering counter-occluder (COC) is sutured at the central 40% portion of the occluder (OCC); when the centering COC is stretched is forming a balloon shaped structure, pulling the OCC over the center of the ASD; subsequently the COC is buttoned with the OCC, forming a double 8 disk on the right side of the atrial septum. Occlusion was performed in 10 patients 5–56 years old (median 22). All had been rejected for occlusion by the regular buttoned device, either because of large defect size, or inadequate septal rim. The defect size varied between 23–31 mm (median 27) and the device size between 45–60 mm (median 50). All devices were introduced through 11F long sheaths. All patients remained stable. Seven had immediate effective occlusions and three had residual shunts. Follow-up ranged between 2–6 months. Unbuttoning without embolization was experienced in the second case; despite the trivial residual shunt, the patient developed severe hemolysis and was operated 2 weeks after implantation. The other patients are doing well.

Conclusions: The CBD can offer transcatheter repair in large ASDs corrected only by Surgery in the past. The early results are promising; larger trials are justified.

984

Treatment of Restenosis: Animal Models

Wednesday, March 22, 1995, 9:00 a.m.–11:00 a.m.

Ernest N. Morial Convention Center, Hall E

Presentation Hour: 9:00 a.m.–10:00 a.m.

984-23

Efficacy of Cytochalasin B in Inhibiting Coronary Restenosis Caused by Chronic Remodeling After Balloon Trauma in Swine

Lawrence L. Kunz, Lauren M. Tatalick, Peter G. Anderson, Robert W. Schreff, Gary S. Roubin. *NeoRx Corporation, Seattle, Wa; University of Alabama at Birmingham, Birmingham, Al*

The predominant role of geometric remodeling in restenosis after percutaneous coronary angioplasty (PTCA) has recently been described. In this study, Cytochalasin B (CB), a compound which reversibly blocks actin polymerization and thereby inhibits smooth muscle contraction and geometric remodeling, was tested for its ability to inhibit restenosis after balloon trauma in a swine coronary model. The left circumflex artery was traumatized with a torquable embolectomy catheter and treated with either saline, 0.1 μ g/ml or 1.5 μ g/ml CB applied directly to the arterial wall with a Cordis Microporous Infusion Catheter (MIC). Pigs were sacrificed 3 weeks post-surgery and the left coronary artery was processed for histopathology. Histologically, traumatized and treated coronary arteries in all groups were characterized by tears in the internal elastic lamina which occasionally extended into the tunica media, reorientation of the inner myofibers of the tunica media perpendicular to the lumen, occasional dissecting aneurysms, and intimal hyperplasia. Morphometric evaluation of vascular luminal area demonstrated a significant difference between treatment groups and the saline control. Saline control pigs had a mean luminal area of 55.8% (44.2% stenosis) compared to the mean of the proximal and distal vessel lumen areas. Pigs treated with 0.1 μ g/ml CB had luminal areas of 92.1% (7.9% stenosis, $p < 0.01$), and pigs treated with 1.5 μ g/ml CB had luminal areas of 112.4% (12.4% dilation, $p = 0.001$). Treatment with 0.1 μ g/ml CB markedly inhibited restenosis and treatment with 1.5 μ g/ml CB actually resulted in increased in luminal area.

In this model of vascular injury, treatment with CB resulted in increased

luminal patency which appears to be associated with chronic geometric remodeling despite concurrent intimal proliferation. Treatment of traumatized coronary arteries with CB may be useful in diminishing restenosis in patients undergoing PTCA.

984-24

Chronic Hirudin Infusion Reduces Neointimal Thickening After Injury in a Porcine Coronary Model

Sanjay S. Srivatsa, William D. Edwards, Robert D. Simari, David R. Holmes Jr, Robert S. Schwartz. *Mayo Foundation, Rochester, MN 55905*

Thrombus formation at sites of vascular injury provides cytokines, growth factors, and biodegradable matrix for cellular migration, proliferation, and matrix synthesis. We hypothesized that potent limitation of thrombus deposition following coronary arterial injury would significantly attenuate restenotic neointimal formation. Following oversized metallic coil implantation, 26 domestic pigs received either recombinant PEG Hirudin, (7 animals, 1 mg/kg IV bolus, 0.1 mg/kg/hr IV for 5 days) with a goal of keeping the ACT at 200 seconds, or placebo (12 animals). Survival until euthanasia was 28 ± 2 days. Linear regression models were constructed for planimetric mean neointimal (NI) thickness vs. mean vascular injury score (INJ).

Group	Hirudin	Control	p
INJ	2.1 ± 0.5	2.1 ± 0.7	NS
NI (mm)	0.44 ± 0.19	0.71 ± 0.36	<0.01

The neointima vs. injury regression equations for each group showed statistically significant differences in intercept, but not slope:

Hirudin: $NI = 0.35 \times INJ - 0.30$, $r = 0.86$
Control: $NI = 0.43 \times INJ - 0.18$, $r = 0.81$

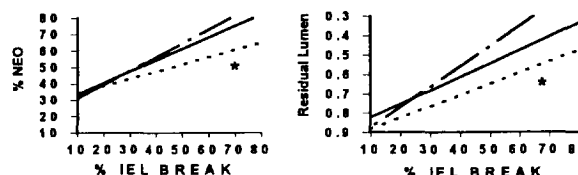
Conclusions: rPEG Hirudin administered early and in doses sufficient to maintain the activated clotting time at 200 seconds decreased the mean NI by 0.27 mm, a difference that would be angiographically detectable and clinically significant.

984-25

Prolonged Local Infusion of Low Dose Angiopeptin Reduces Neointima After Balloon Injury in Swine Coronaries Using the Dispatch™ Site-Specific Delivery Catheter

Edward C. Santoian, Norman Tarazona, Marc A. Taylor, Richard A. Kovach, Steven A. Malosky, Charles A. Dennis. *Deborah Heart & Lung Center Brown Mills, NJ; Deborah Research Institute, Browns Mills, NJ*

Local infusion of angiopeptin (AP) into injured swine coronary arteries using the porous balloon has been shown to reduce neointima. The purpose of this study was to compare prolonged (20 min) infusion of low dose AP (20 μ g/kg) with a short (3 min) infusion of high dose AP (500 μ g/kg) using the Dispatch™ device which allows atraumatic and extended drug/arterial wall contact. 21 swine underwent overstretch balloon injury to the coronary arteries. AP was infused at either low or high dose immediately post-injury. Vessels were harvested at 14 days and the neointimal area (NEO), % neointima (NEO/Wall Area), % internal elastic lamina fracture (IEL break/IEL length) and residual lumen (lumen area/lumen area + intimal area) were determined.



Conclusions: Prolonged low dose local infusion of AP at the injury site reduced the neointima and improved the residual lumen in the treated vessel. The beneficial effect of AP was not demonstrated with the higher dose, shorter duration local infusion.

984-26

Prolonged Local Endovascular Drug Delivery for more than 14 Days with a New Catheter

P. Gonschior, C. Pahl, B. Höfling. *Med. Dept. I, Klinikum Großhadern, University of Munich, Germany*

Tissue hyperplasia is a characteristic feature of restenotic tissue. Local application of antiproliferative drugs e.g. Photofrin II® (PFII; QLT, Canada), a photosensitive drug, might enable selective impairment of proliferating tissue by photodynamic therapy or other antiproliferative strategies. The efficacy of this therapy depends mainly on the method of drug application. Local drug delivery (LDD) consisting of six thin injection needles (31 G) that can